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20 Dec 2005

In regards to: Patent Application 10/800,789

Director
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Subject: Rebuttal to Final Office Action Summary mailed on 16 Nov 05 (page 1 of 10)

Dear Sir or Ma'am,

It should be understood by all in the USPTO that disrespect is not the intention of this correspondence. My intention is to reply to the most recent Office Action Summary with the most accurate information possible in defense of my patent application and request for issuance of a patent. Please reference my last 6 page correspondence (dated 12 Oct 2005) as the contents of that letter is important to this response to the USPTO Final Office Action Summary mailed on 16 Nov 2005. In my last correspondence I requested review by the Director of the USPTO. I requested this review specifically because I wanted a third party review that was above and outside the purview of the examiner Mark Tsidulko, primary examiner John Ward and supervisor Sandra O'Shea. The response I received was my request was delegated to the SPE. John Ward signed the latest Office Action Summary and the examiner is once again listed as Mark Tsidulko. Therefore I did not receive the third party review that I requested. This is an important factor as I am requesting a review by the Director to verify fairness, correctness and legal accuracy of the examination procedures conducted on my patent application. Once again, as I present this latest rebuttal to the USPTO I request a review by the Director of the USPTO or the highest third party review authorized outside of Art Unit 2875 and above individuals listed above. After presenting my 6 page rebuttal in my last correspondence, I finally persuaded John Ward and Mark Tsidulko that the Claim Rejections in the first two Office Action Summaries were **not** valid. The reference cited in the Office Action Summaries was Lamparter, (US 5,604,480). In my 6 page document I provided strong evidence to disprove the statements documented in the Claim Rejections. In these previous two Office Action Summaries (before the most recent) the examiner attempted to back his Claim Rejections with a strategy of suggesting a previously described/patented invention with reference to Title 35 U.S.C. 102(b) and also attempted to document that the invention was obvious in view of the reference cited. My 6 page rebuttal successfully argued that the Claim Rejections were in fact **not** correct. In the latest Office Action Summary the examiner and primary examiner cite three **new** inventor references and move their strategy full focus to rejection under the following Title:

35 U.S.C. 103 Conditions for patentability; nonobvious

subject matter.

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, **if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious** at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

On the contrary I believe my patent claim is a patentable novelty :

35 U.S.C. 101 Inventions patentable.

Whoever invents or discovers any **new** and useful process, machine, manufacture, or composition of matter, or **any new** and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title.

I absolutely object to the claim rejections based on Title 35 U.S.C. 103 (a) for factual evidence that is presented (as a whole) against the references cited. One very important issue must be clarified before proceeding. In the most recent Office Action Summary the examiner **acknowledged** in the Detailed Action Section that Claim 2 is at issue, but addressed the amendment "filed on 8/15/2005". The last amendment document for Claim 2 (Currently amended) was submitted with my rebuttal (letter dated 12 Oct 2005). This rebuttal and amendment document was faxed to the USPTO on 13 Oct 2005 and mailed to the USPTO on 14 Oct 2005. This amendment document corrected the Claim Objections listed in the last Office Action Summary mailed by the USPTO on 27 Sep 2005. Prior to this I had also submitted an amendment document that corrected the status identifiers identified in the Notice of Non-Compliant Amendment (mailed by the USPTO on 22 Aug 2005). This amendment document was faxed to the USPTO on 6 Sep 2005 along with a letter dated 5 Sep 2005. I have all correspondence on file for reference. I assume that an error with dates was made and that the acknowledgement documented applies to this most recent amendment document for Claim 2 (Currently amended). Before proceeding please reference Claim 2 (Currently amended) and read it entirely. This is important to fully understand my arguments below. One very important fact must be considered in combination with the arguments below. The **claim** for my invention documents physically arranging light elements into the shape of two cats sitting together to form one heart shape with their bodies, paws and tails. The light elements provide a pleasing visual effect by completely illuminating the two cats sitting together and the heart shape that is formed with their bodies, paws and tails. It is important to recognize

that the light elements for each cat forms **half** of the heart shape and combined together they form one heart shape. None of the **claims** for the references cited document what is documented in my claim. The **claims** of the references cited do not document physically arranging light elements in the shape of two cats that form one heart shape with their bodies, paws and tails. Therefore it is the responsibility of the examiner to prove his case of motivation to modify within the legal realms of the system. Reference **706.02(j)**

Contents of a 35 U.S.C. 103 Rejection. The evidence that follows discloses several discrepancies in the examiner's Claim Rejections and errors in application examination procedures. The examiner states in his Claim Rejections "Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wainwright (US 6,651,365) in view of Leslie (US 2003/0145497) and Shieh (US 2005/0157485)." I have reviewed these patent applications as provided by the USPTO on the USPTO website. First for the record, of the three (3) references cited only Wainwright (US 6,651,365) has an issued patent.

Shieh and Leslie have published applications. Second for the record, the publication date (21 Jul 2005) for Shieh is not older than one year prior to my application filing date (16 March 2004). The publication date for Shieh is after the filing date for my invention.

Reference **35 U.S.C. 102(a),(b)**. Consider the following fallacies and discrepancies as the examiner attempted to use these three references in combination as evidence of obviousness and justification to modify and arrive at the claimed invention. The examiner documents in his Claim Rejections " Wainwright discloses (Fig. 3) a plurality of light elements that **are** form shape of a plurality of **the** animals (dolphins in this case), the light elements may obtain any desired color (col.4, lines 55-59; col.5, lines 24-27; col.8, lines 55-58). **Wainwright discloses the instant claimed invention except for a shape of cats.**" I reviewed Wainwright's claims and in comparison to my claim I present the following.

To achieve a **continuous animated motion** of two or more images Wainwright discloses in his claims that groups of optical fibers are mounted in "pre-determined arrays" under the control of "pre-programmed illumination sequences". It is a requirement to have the **pre-determined arrays** in combination with **pre-programming** to achieve the animated displays the inventor intended (envisioned) at the time of invention. Wainwright's **claims** do not document any specific type of displays such as dolphins. In his specification's "figures" he discloses an "animation of a jumping dolphin", a "bird in flight", a "swaying palm tree", "series of footprints", etc.

Wainwright's specification does not disclose any form of a heart shape whatsoever. More specifically his application does **not** document using "pre-determined arrays" of fiber optics to achieve the ability to display two cats sitting together which form a heart shape with their bodies, paws and tails. By comparison my claim documents light elements physically arranged to display two cats sitting together forming one heart shape with their bodies, tails and paws. Therefore the statement "**Wainwright discloses the instant claimed invention except for a shape of cats.**" is not accurate and is misleading and therefore incorrect. The modification necessary to Wainwright's invention would be to arrange the optical fibers in a pre-determined array of two cats sitting together that form a heart shape with their bodies, paws and tails. A modification to the pre-programming would also be required to illuminate the pre-determined optical fibers. Wainwright or anyone experienced in the art would have to have had (at time of the

invention) the perception or have envisioned two cats sitting together forming one heart shape with their bodies, paws and tails to be motivated to make the modification. I argue that one experienced in the art must first envision or perceive what is documented in the claim for my invention before being motivated to make it or modify an existing invention. Had Wainwright envisioned this he would have included it in his “pre-determined arrays” and “pre-programmed illumination sequences”. In fact he did **not** do this and did not document it in his claims. I therefore argue that the proposed modification is not obvious to one experienced in the art and the motivation to do so with this reference is not proven. Further, as documented in Wainwright’s **claims** his invention’s **primary purpose** is to display animation (motion) with the pre-determined and pre-programmed fiber optics. This is a **dynamic** display. By comparison my invention is a **static** display. To modify Wainwright’s invention to display two cats sitting together which form a heart shape with their bodies, paws and tails in a **static** display (such as my invention operates) would mean a substantial change in principle of operation for Wainwright’s invention. This modification would render the primary reference inoperable for its intended purpose. Reference MPEP 2143.01 V & MPEP 2145 III (last paragraph). Considering this evidence and the evidence that follows I declare my invention is a “new” patentable novelty when compared to Wainwright’s claims and specification. It should be noted at this time that I am also experienced in the art. I disclosed my education and experience in electronics in my reply to the last Office Action and it is again included at the end of this correspondence. Further, the examiner documents in his Claim Rejections “Leslie discloses (Fig. 7) a display of patterns providing an symmetrical image of two cats sitting together. **Leslies discloses the instant claimed invention except for a shape of heart.**” Leslie discloses in his **claims** the ability to use a “**computer**” to display an “image and its enantiomorph” on a “**computer screen**”. Leslie’s **claims** do **not** disclose physically arranging light elements in the shape of two cats sitting together which form a heart shape with their bodies, paws and tails as it is so documented in the claim for my invention. In view of Leslie’s claims, the modification required to achieve what is documented in my claim would change the **principle of operation** of Leslie’s invention. That modification would be converting a computer and computer screen that displays figures into light elements that are physically arranged to illuminate figures. More specifically light elements that form two cats sitting together which form a heart shape with their bodies, paws and tails. This modification would render the reference inoperable for its intended purpose. Reference MPEP 2143.01 V & MPEP 2145 III (last paragraph). Further the reference for Leslie “teaches away” when combined and compared to Wainwright’s invention. Compare the principle of operation of Leslie’s invention documented in his claims (computer that displays images on a computer screen) and Wainwright’s claims (pre-determined fiber optics illuminated by pre-programmed sequences). Illuminated visual effects from light elements are substantially different from visual effects produced on a computer screen. Teaching away also applies when combining the reference for Leslie with the reference for Shieh. Reference **MPEP 2145 X.D.2**. Therefore the reference for Leslie **does not** support Wainwright’s reference and does not further support the examiner’s projected motivation to make the modification necessary to arrive at the invention that is

documented in my claim. Further the statement “**Leslies discloses the instant claimed invention except for a shape of heart.**” is misleading. If the “shape of a heart” was included along with Leslie’s computer display of cats it would not equate to what is specifically documented in my claim which is light elements physically arranged in the shape of two cats sitting together which form one heart shape with their bodies, paws and tails. Again one experienced in the art would have to first envision or have the perception of what is documented in my claim. Then the computer would have to be programmed to display the entire form on the computer screen. Therefore the motivation to make this modification is not obvious. For these reasons the reference does not further support the primary reference. Further, the examiner documents in his Claim Rejections “Shieh discloses a decorative lighting device and recites, that the ornament may be differently shaped animals or articles (page 1, [0004]), therefore accordingly, any desired shape, including cats and hearts, may be used in the device for decorative appearance, without changing the functionality of the device.” Once again this is a misleading and inaccurate statement. Shieh discloses in his **claims** a decorative lighting device with a “windmill” that can be displayed with a “specific design”. The specific design is not specified in the claims. Animals and other shapes are **not** documented in Shieh’s claims. The examiner’s statement “Shieh discloses a decorative lighting device and recites, that the ornament may be **differently shaped animals** or articles (page 1, [0004]),...” is actually in fact a disclosure by Shieh **of the prior art** of Taiwan Patent Publication No. 220080. This is misleading as this prior art disclosure is **not** specific to Shieh’s claims and therefore doesn’t support the examiner’s statement in the Claim Rejections. The Taiwan Patent Publication is not listed on the Notice of References Cited Form (PTO-892) as a reference. Even if it was listed this ornament device (as disclosed) is actually **two transparent hollow halves** with a Christmas light on the inside. Once again to modify this “ornament” to display light elements physically arranged in the shape of two cats sitting together which form one heart shape with their bodies, paws and tails would require a change in principle of operation of the ornament device itself. This would render the prior art (disclosed by Shieh) inoperable for its intended purpose and would not further substantiate the examiner’s projection of motivation to modify to achieve my invention. Reference MPEP 2143.01 V & MPEP 2145 III (last paragraph). Therefore this prior art disclosed by Shieh loses its credibility to be combined with Wainwright’s to justify motivation for modification to arrive at the claimed invention. In the section “Summary of the Invention” in Shieh’s specification “**different animals**” are listed along with other scenery that can be displayed with the windmill. However, “**differently shaped animals**” are not listed. In view of the claims and specification for Shieh when combined with Wainwright’s reference they do not further strengthen the examiner’s projection that one experienced in the art would be motivated to make the modifications required to achieve what is documented in my claim. Wainwright discloses animals in his specification’s figures therefore combining the reference for Shieh with Wainwright does **not** add any further credibility to the Claim Rejections as presented. One experienced in the art cannot conclude from Shieh’s claims that there is motivation to make the modification of physically arranging light elements in the shape of two cats sitting together which form a heart shape with their bodies, paws and tails. One

experienced in the art must first envision or have a perception to make the modifications which would be difficult without the knowledge of the **new** teachings in my claim. Lastly, the examiner states in his Claim Rejections “It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to provide the device of Wainwright having shape of combination of the cats and hearts, as taught by Leslie and Shieh, for the purpose of the decorative appearance.” This statement has been substantially discredited and proven incorrect with the evidence provided above. Further, this statement is again misleading. The specifications for the references cited do not disclose producing **any form** of a heart shape. More importantly the ability to illuminate a “combination of cats and hearts” is one thing and physically arranging light elements to illuminate two cats sitting together which form one heart shape with their bodies, paws and tails is something substantially different. It is so different that I claim that my invention is a patentable novelty.

In summary of the Office Action Claim Rejections:

- 1) After reading the disclosure in the claim for my invention it is obvious to one experienced in the art that one would have to first gain a perception or envision (as I did) specifically what is disclosed in my claim before one would be motivated to make the modifications.
- 2) The references cited in fact do **not** teach or suggest all of the claim limitations of my invention. Reference **MPEP 706.02(j)**.
- 3) The references cited alone or in combination do not explicitly nor implicitly (expressly or impliedly) suggest the claimed invention nor do they suggest motivation to modify. Reference **MPEP 706.02(j)**.
- 4) Statements provided in the Claim Rejections are not factual.
- 5) The modifications required to the primary reference would require a change in the principle of operation of the device (modifying a dynamic display to a static display). The modification required would make the primary reference inoperable for its intended purposes. Reference **MPEP 2143.01 V & 2145 III (last paragraph)**.
- 6) The modifications required to the secondary reference (Leslie) and to the **prior art reference** disclosed in the tertiary reference (Shieh) would require a change in the principle of operation of the devices. The modifications required would make these references inoperable for their intended purposes. Reference **MPEP 2143.01 V & 2145 III (last paragraph)**. Therefore they do not support the primary reference as so stated in the Claim Rejections that the teachings can be combined to make the claimed invention.
- 7) Examiner does not fully comply with **MPEP 706.02(j) Contents of a 35 U.S.C. 103 Rejection**
- 8) Leslie’s claims teach away when combined with the references for Wainwright and Shieh. Reference **MPEP 2145 X.D.2**.
- 9) The fallacies and discrepancies in the references cited substantially discredit the legality of the proposed modifications documented in the Claim Rejections. Therefore the references cited do not provide support to substantiate the examiner’s statement that it would be obvious to make the proposed modifications. Subsequently the examiner’s

skill is the **only** real factor left to justify the proposed modifications. Other than stating it is an obvious modification (in his eyes) no other convincing line of reasoning was documented that supports motivation to make the proposed modifications to arrive at the invention claimed. Reference **MPEP 706.02(j)**. Skill alone cannot substantiate a conclusive argument for motivation of the proposed modifications. Lack of supportive references and lack of convincing line of reasoning makes the examiner's proposed modification debatable by others experienced in the art. It is debatable to me as a person skilled in the art. For example, minus supporting references it could be argued that the only factors used to justify the modifications proposed by the examiner is hindsight and the teachings disclosed in my claim. It could be argued that the examiner's thought process was guided by knowledge from my claim's teachings while documenting the Claim Rejections and that knowledge from my claim's teachings was the primary justification of suggesting the proposed modifications. Fallacies and discrepancies in the references disclosed place a high focus on the examiner's Claim Rejections that cannot be debated.

10) Due to the fallacies and discrepancies in the references cited and statements in the Claim Rejections it is important to note that other USPTO legal guidance (in favor of the applicant) may be applicable. Even though it is not documented in this rebuttal it must be recognized and abided by when this document is reviewed by those in the USPTO.

11) The examiner discloses in his Claim Rejections prior art not specific to Shieh's specification which makes the documented statement incorrect. The examiner cites details in his Claim Rejections that are extracted from other parts of the specifications of the references cited, but these details are **not** documented specifically in the claims themselves. This act of reading limitations from the specifications into the claims is a very important factor when considering my claim that my invention (specifically what is documented in my claim) is a "new" patentable novelty. The examiner has not proven a case otherwise with the references cited.

In view of all evidence presented in this rebuttal I respectfully request a reversal of the decision to make the latest Office Action Final. In consideration of **all arguments presented** as a whole against the references cited I respectfully request that the Director direct issuance of a patent for my invention. Rebuttal for other sections continues below.

In the Office Action Conclusion the examiner states, "Applicant's **amendment** necessitated the new ground(s) of rejection presented in this Office action." From my initial Claim submission to the present Claim 2 (Currently amended) only **minor** changes have been made to my claim. These minor changes were submitted to correct previous Office Action Claim Objections with minor changes in format and minor changes in choice of wording. From my very first claim I have claimed physically arranging light elements into the shape of two cats sitting together to form one heart shape with their bodies, tails and paws. This primary principle of operation has remained constant throughout all of the minor changes made to my claim. It is important to note that in the **first** Office Action Summary the examiner rejected my Claim under 35 U.S.C. 102(b) and stated in the end of the Claim Rejections "It would have been an obvious matter of

design choice to provide the different decorative shapes formed by the arrays of the LEDs for the purpose of an aesthetic appearance.” I successfully rebutted these Claim Rejections. However this is the same basic argument in the new Claim Rejections. Therefore this was very weak grounds to introduce new Claim Rejections. This should be examined very thoroughly.

Drawings, Photos and Specification

The examiner states in the Office Action Drawings Section “The drawings are objected to because of description “@2004 Mark Court” below the figures...” It should be clear that I submitted one (1) drawing and the symbol below that drawing was a “©” symbol not an “@” symbol. I have a copy of what I submitted and included it with this correspondence. Either the examiner made a typographical error or the “©” symbol was not properly recognized by USPTO scanning equipment. The complete notice under the **one** drawing submitted was “©2004 Mark Court” not “@2004 Mark Court” as documented by the examiner. This copyright statement is in fact allowed to be placed with the drawing in the location where it is located. Included with this correspondence is the actual USPTO guiding documentation that I downloaded from the USPTO website and used as a guide to submit my utility application. **These are the rules that applied at the time I submitted my application.** Please reference the **large brackets** I placed around this USPTO guidance (**included with this correspondence**) that verifies my arguments in this section. The mailed copy of this correspondence will have **large brackets with yellow highlighting**. Please disregard all other markings and notes that I made at that time. Specifically **Consolidated Patent Rules 1.84 (s) Copyright or Mask Work Notice** (as provided by the USPTO to the public at time of application submission) states that the copyright notice is allowed as submitted on my drawing. As required, the **authorization language** for this copyright notice is in fact included at the beginning of my specification. **Reference Consolidated Patent Rules 1.71(d),(e)** included with this correspondence (as it was provided by the USPTO to the public at time of application submission). It is important to state at this time that my patent application drawing my **not** be posted on the USPTO website unless it displays the **correct copyright notice as originally submitted**. Further, the examiner documents in the Office Action Drawings Section “...and “Cat’s heart shape night light Mark A. Court (530)633...” above the photos 2 and 3.” **Reference Consolidated Patent Rules 1.84 (b) Photographs** included with this correspondence (as it was provided by the USPTO to the public at time of application submission). CPR 1.84 (b) does not provide any specific information on what can or cannot be displayed with photographs or how the information must be included with the photographs. In my review of the documentation available at the time of submission (Consolidated Patent Rules dated Oct. 1, 2003 and MPEP Rev. 1, Feb. 2003) I did not find any further specific guidance on information that can or cannot be included with photographs. Also, downloaded at the time of application submission was “**A Guide to Filing A Non-Provisional (Utility) Patent Application**” (my downloaded copy dated 2/2/2004). Reference the Section **Drawing Requirements** included with this correspondence that discusses photographs. This section does not provide any specifics

on what information can or cannot be included with the photographs or how it must be included nor is it found anywhere else in this guide. Reference **Consolidated Patent Rules 1.84 (c) Identification of drawings** included with this correspondence (as it was provided by the USPTO to the public at time of application submission). CPR 1.84(c) states that the inventor's name and title of invention may be included with the drawings. Reference "**A Guide to Filing A Non-Provisional (Utility) Patent Application Identification of Drawings**" included with this correspondence (as it was provided by the USPTO to the public at time of application submission). This section of this guide states that the inventor's name, title of invention **and phone number** may be included with the drawings. I included all of this information on the two (2) photographs that I submitted because the USPTO did **not** provide specific guidance covering what information could and could not be included with the photographs or how it must be included. Further, the examiner documents in the Office Action Drawings Section "Also, the descriptions "Photo 1 of 2" and "Photo 2 of 2" above the **drawings** must be changed to -Fig.2- and -Fig.3- respectively." It should be noted that the highlighted word "drawings" above should have been documented as "photos". The lack of specific guidance from the USPTO is the reasoning behind why I submitted the two (2) photographs this way. Therefore the photos should be excepted as they were submitted. However, if the examiner insists on this trivial matter I request that the examiner use white out and type -Fig.2- and -Fig.3- on white sticky paper and place on the photographs as required for scanning. An alternative method would be to use software available with scanners to crop the photographs and then place them in a new document with -Fig.2- and -Fig.3- included. I give the examiner permission to do this. If the examiner refuses to make these minor corrections the photos are not a requirement of the application submitted. However, as stated above the drawing was in fact submitted correctly and should be accepted (as it was when it was originally submitted). Further, the examiner documents in the Office Action Specification Section "The disclosure is objected to because of the following informalities: the description "@2004 Mark Court" must be taken out from the end of each paragraph of the specification. Appropriate correction is required." It should be clear once again that I submitted the "©" symbol i.e. "©Mark Court" not the "@" with my copyright statements in my application. Further, Reference **Consolidated Patent Rules 1.71(d),(e)** included with this correspondence (as it was provided by the USPTO to the public at time of application submission). CPR 171 (d),(e) specifically authorizes copyright notices within the patent application itself therefore these notices do not need to be removed as stated by the examiner. It is important to note that review of the USPTO website reveals that my specification was posted **without** my copyright notices. Further, the examiner documents in the Office Action Specification Section "Applicant is reminded of the proper content of a specification. The following guidelines illustrate the **preferred layout** for the specification of a utility application. These guidelines **are suggested** for the applicant's use." As a non-patent attorney, I thoroughly followed "**A Guide to Filing A Non-Provisional (Utility) Patent Application**" and **Consolidate Patent Rules 1.77 Arrangement of application elements** (copy included) that was available to the public by the USPTO at time of application submission. I submitted my application using this

guidance. At this point an important observation must be made. The two Office Action Summaries prior to the most recent one **did not** reject my application's Drawing, photos and Specification. Even if it is Standard Operating Procedure for the USPTO to inject new rejections into Office Actions **after several did not include these rejections** the USPTO should understand that I consider this a very unprofessional practice. Further once Claim Rejections for one Office Action Summary has been successfully rebutted (as I did) searching for new references and introducing new Claim Rejections at a later date (with weak grounds of reasoning) also seems to be a very unprofessional practice. Considering the complexity of the patent application process and time involved this is an injustice to the public submitting applications. I request a thorough review by the Director if any Office Action Summaries subsequent to this correspondence are documented with **new** Claim Rejections citing **new** references. I hereby submit this rebuttal with all due respect.



Mark A. Court
Patent Application 10/800,789
Inventor of the "Cats' Heart Shape Night Light"

Included with this correspondence: Copies of Consolidated Patent Rules (dated 1 Oct 2003), A Guide to Filing A Non-Provisional (Utility) Patent Application (my downloaded copy dated 2/2/2004), copy of drawing.

Electronic Qualifications

I was formally trained by the USAF as an electronics maintenance technician. The training included applying basic electronic theory, troubleshooting electronic circuits and specialized training to maintain a variety of computer and electronic communications systems. Combined with my military experience, I now have over 20 years of electronic experience maintaining computer and specialized communication systems. I have a degree in Electronic Systems Technology and hold industry certification as a Cisco Certified Network Associate (CCNA). Documented proof is available upon request.

can understand and shall state that such individual understands the content of any documents to which the oath or declaration relates.

(b) Unless the text of any oath or declaration in a language other than English is a form provided or approved by the Patent and Trademark Office, it must be accompanied by an English translation together with a statement that the translation is accurate, except that in the case of an oath or declaration filed under § 1.63, the translation may be filed in the Office no later than two months from the date applicant is notified to file the translation.

[42 FR 5594, Jan. 28, 1977; para. (b), 48 FR 2711, Jan. 20, 1983, effective Feb. 27, 1983; para. (b) revised, 62 FR 53131, Oct. 10, 1997, effective Dec. 1, 1997]

§ 1.70 [Reserved].

(Editor's note: Substance moved to § 1.497)

[52 FR 20046, May 28, 1987, effective July 1, 1987]

SPECIFICATION

§ 1.71 Detailed description and specification of the invention.

(a) The specification must include a written description of the invention or discovery and of the manner and process of making and using the same, and is required to be in such full, clear, concise, and exact terms as to enable any person skilled in the art or science to which the invention or discovery appertains, or with which it is most nearly connected, to make and use the same.

(b) The specification must set forth the precise invention for which a patent is solicited, in such manner as to distinguish it from other inventions and from what is old. It must describe completely a specific embodiment of the process, machine, manufacture, composition of matter or improvement invented, and must explain the mode of operation or principle whenever applicable. The best mode contemplated by the inventor of carrying out his invention must be set forth.

(c) In the case of an improvement, the specification must particularly point out the part or parts of the process, machine, manufacture, or composition of matter to which the improvement relates, and the

description should be confined to the specific improvement and to such parts as necessarily cooperate with it or as may be necessary to a complete understanding or description of it.

(d) A copyright or mask work notice may be placed in a design or utility patent application adjacent to copyright and mask work material contained therein. The notice may appear at any appropriate portion of the patent application disclosure. For notices in drawings, see § 1.84(s). The content of the notice must be limited to only those elements provided for by law. For example, "©1983 John Doe" (17 U.S.C. 401) and "*M* John Doe" (17 U.S.C. 909) would be properly limited and, under current statutes, legally sufficient notices of copyright and mask work, respectively. Inclusion of a copyright or mask work notice will be permitted only if the authorization language set forth in paragraph (e) of this section is included at the beginning (preferably as the first paragraph) of the specification.

(e) The authorization shall read as follows:

A portion of the disclosure of this patent document contains material which is subject to (copyright or mask work) protection. The (copyright or mask work) owner has no objection to the facsimile reproduction by anyone of the patent document or the patent disclosure, as it appears in the Patent and Trademark Office patent file or records, but otherwise reserves all (copyright or mask work) rights whatsoever.

(f) The specification must commence on a separate sheet. Each sheet including part of the specification may not include other parts of the application or other information. The claim(s), abstract and sequence listing (if any) should not be included on a sheet including any other part of the application.

[paras. (d) and (e), 53 FR 47808, Nov. 28, 1988, effective Jan. 1, 1989; para. (d), 58 FR 38719, July 20, 1993, effective Oct. 1, 1993; para. (f) added, 68 FR 38611, June 30, 2003, effective July 30, 2003]

§ 1.72 Title and abstract.

(a) The title of the invention may not exceed 500 characters in length and must be as short and specific as possible. Characters that cannot be captured and recorded in the Office's automated information systems may not be reflected in the Office's records in

(7) Assignee information This information includes the name (either person or juristic entity) and address of the assignee of the entire right, title, and interest in an application. Providing this information in the application data sheet does not substitute for compliance with any requirement of part 3 of this chapter to have an assignment recorded by the Office.

(c) Supplemental application data sheets Supplemental application data sheets:

(1) May be subsequently supplied prior to payment of the issue fee either to correct or update information in a previously submitted application data sheet, or an oath or declaration under § 1.63 or § 1.67, except that inventorship changes are governed by § 1.48, correspondence changes are governed by § 1.33(a), and citizenship changes are governed by § 1.63 or § 1.67; and

(2) Should identify the information that is being changed (added, deleted, or modified) and therefore need not contain all the previously submitted information that has not changed.

(d) Inconsistencies between application data sheet and oath or declaration. For inconsistencies between information that is supplied by both an application data sheet under this section and by an oath or declaration under §§ 1.63 and 1.67:

(1) The latest submitted information will govern notwithstanding whether supplied by an application data sheet, or by a § 1.63 or § 1.67 oath or declaration, except as provided by paragraph (d)(3) of this section;

(2) The information in the application data sheet will govern when the inconsistent information is supplied at the same time by a § 1.63 or § 1.67 oath or declaration, except as provided by paragraph (d)(3) of this section;

(3) The oath or declaration under § 1.63 or § 1.67 governs inconsistencies with the application data sheet in the naming of inventors (§ 1.41(a)(1)) and setting forth their citizenship (35 U.S.C. 115);

(4) The Office will initially capture bibliographic information from the application data sheet (notwithstanding whether an oath or declaration governs the information). Thus, the Office shall generally not look to an oath or declaration under § 1.63 to see if the bibliographic information contained therein is consistent with the bibliographic information captured from an application data sheet (whether the oath or

declaration is submitted prior to or subsequent to the application data sheet). Captured bibliographic information derived from an application data sheet containing errors may be recaptured by a request therefor and the submission of a supplemental application data sheet, an oath or declaration under § 1.63 or § 1.67, or a letter pursuant to § 1.33(b).

[Added, 65 FR 54604, Sept. 8, 2000, effective Nov. 7, 2000; para. (b)(7) added, 65 FR 57024, Sept. 20, 2000, effective Nov. 29, 2000]

§ 1.77 Arrangement of application elements.

(a) The elements of the application, if applicable, should appear in the following order:

- (1) Utility application transmittal form.
- (2) Fee transmittal form.
- (3) Application data sheet (see § 1.76).
- (4) Specification.
- (5) Drawings.
- (6) Executed oath or declaration.

(b) The specification should include the following sections in order:

- (1) Title of the invention, which may be accompanied by an introductory portion stating the name, citizenship, and residence of the applicant (unless included in the application data sheet).
- (2) Cross-reference to related applications (unless included in the application data sheet).
- (3) Statement regarding federally sponsored research or development.
- (4) Reference to a "Sequence Listing," a table, or a computer program listing appendix submitted on a compact disc and an incorporation-by-reference of the material on the compact disc (see § 1.52(e)(5)). The total number of compact discs including duplicates and the files on each compact disc shall be specified.
- (5) Background of the invention.
- (6) Brief summary of the invention.
- (7) Brief description of the several views of the drawing.
- (8) Detailed description of the invention.
- (9) A claim or claims.
- (10) Abstract of the disclosure.
- (11) "Sequence Listing," if on paper (see §§ 1.821 through 1.825).

(c) The text of the specification sections defined in paragraphs (b)(1) through (b)(11) of this

(d) Drawings submitted after the filing date of the application may not be used to overcome any insufficiency of the specification due to lack of an enabling disclosure or otherwise inadequate disclosure therein, or to supplement the original disclosure thereof for the purpose of interpretation of the scope of any claim.

[43 FR 4015, Jan. 31, 1978; para. (a), 53 FR 47809, Nov. 28, 1988, effective Jan. 1, 1989]

§ 1.83 Content of drawing.

(a) The drawing in a nonprovisional application must show every feature of the invention specified in the claims. However, conventional features disclosed in the description and claims, where their detailed illustration is not essential for a proper understanding of the invention, should be illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation (e.g., a labeled rectangular box).

(b) When the invention consists of an improvement on an old machine the drawing must when possible exhibit, in one or more views, the improved portion itself, disconnected from the old structure, and also in another view, so much only of the old structure as will suffice to show the connection of the invention therewith.

(c) Where the drawings in a nonprovisional application do not comply with the requirements of paragraphs (a) and (b) of this section, the examiner shall require such additional illustration within a time period of not less than two months from the date of the sending of a notice thereof. Such corrections are subject to the requirements of § 1.81(d).

[31 FR 12923, Oct. 4, 1966; 43 FR 4015, Jan. 31, 1978; paras. (a) and (c) revised, 60 FR 20195, Apr. 25, 1995, effective June 8, 1995]

§ 1.84 Standards for drawings.

(a) *Drawings.* There are two acceptable categories for presenting drawings in utility and design patent applications.

(1) *Black ink.* Black and white drawings are normally required. India ink, or its equivalent that secures solid black lines, must be used for drawings; or

(2) *Color.* On rare occasions, color drawings may be necessary as the only practical medium by

which to disclose the subject matter sought to be patented in a utility or design patent application or the subject matter of a statutory invention registration. The color drawings must be of sufficient quality such that all details in the drawings are reproducible in black and white in the printed patent. Color drawings are not permitted in international applications (see PCT Rule 11.13), or in an application, or copy thereof, submitted under the Office electronic filing system. The Office will accept color drawings in utility or design patent applications and statutory invention registrations only after granting a petition filed under this paragraph explaining why the color drawings are necessary. Any such petition must include the following:

- (i) The fee set forth in § 1.17(h);
- (ii) Three (3) sets of color drawings;
- (iii) A black and white photocopy that accurately depicts, to the extent possible, the subject matter shown in the color drawing; and
- (iv) An amendment to the specification to insert (unless the specification contains or has been previously amended to contain) the following language as the first paragraph of the brief description of the drawings:

The patent or application file contains at least one drawing executed in color. Copies of this patent or patent application publication with color drawing(s) will be provided by the Office upon request and payment of the necessary fee.

(b) *Photographs.*—

(1) *Black and white.* Photographs, including photocopies of photographs, are not ordinarily permitted in utility and design patent applications. The Office will accept photographs in utility and design patent applications, however, if photographs are the only practicable medium for illustrating the claimed invention. For example, photographs or photomicrographs of: electrophoresis gels, blots (e.g., immunological, western, Southern, and northern), autoradiographs, cell cultures (stained and unstained), histological tissue cross sections (stained and unstained), animals, plants, in vivo imaging, thin layer chromatography plates, crystalline structures, and, in a design patent application, ornamental effects, are acceptable. If the subject matter of the application admits of illustration by a drawing, the examiner may require a drawing in place of the photograph. The photographs

must be of sufficient quality so that all details in the photographs are reproducible in the printed patent.

(2) Color photographs. Color photographs will be accepted in utility and design patent applications if the conditions for accepting color drawings and black and white photographs have been satisfied. See paragraphs (a)(2) and (b)(1) of this section.

(c) Identification of drawings. Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and centered within the top margin.

(d) Graphic forms in drawings. Chemical or mathematical formulae, tables, and waveforms may be submitted as drawings and are subject to the same requirements as drawings. Each chemical or mathematical formula must be labeled as a separate figure, using brackets when necessary, to show that information is properly integrated. Each group of waveforms must be presented as a single figure, using a common vertical axis with time extending along the horizontal axis. Each individual waveform discussed in the specification must be identified with a separate letter designation adjacent to the vertical axis.

(e) Type of paper. Drawings submitted to the Office must be made on paper which is flexible, strong, white, smooth, non-shiny, and durable. All sheets must be reasonably free from cracks, creases, and folds. Only one side of the sheet may be used for the drawing. Each sheet must be reasonably free from erasures and must be free from alterations, overwritings, and interlineations. Photographs must be developed on paper meeting the sheet-size requirements of paragraph (f) of this section and the margin requirements of paragraph (g) of this section. See paragraph (b) of this section for other requirements for photographs.

(f) Size of paper. All drawing sheets in an application must be the same size. One of the shorter sides of the sheet is regarded as its top. The size of the sheets on which drawings are made must be:

- (1) 21.0 cm. by 29.7 cm. (DIN size A4), or
- (2) 21.6 cm. by 27.9 cm. (8 1/2 by 11 inches).

(g) Margins. The sheets must not contain frames around the sight (i.e., the usable surface), but should have scan target points (i.e., cross-hairs)

printed on two cater-corner margin corners. Each sheet must include a top margin of at least 2.5 cm. (1 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 1.5 cm. (5/8 inch), and a bottom margin of at least 1.0 cm. (3/8 inch), thereby leaving a sight no greater than 17.0 cm. by 26.2 cm. on 21.0 cm. by 29.7 cm. (DIN size A4) drawing sheets, and a sight no greater than 17.6 cm. by 24.4 cm. (6 15/16 by 9 5/8 inches) on 21.6 cm. by 27.9 cm. (8 1/2 by 11 inch) drawing sheets.

(h) Views. The drawing must contain as many views as necessary to show the invention. The views may be plan, elevation, section, or perspective views. Detail views of portions of elements, on a larger scale if necessary, may also be used. All views of the drawing must be grouped together and arranged on the sheet(s) without wasting space, preferably in an upright position, clearly separated from one another, and must not be included in the sheets containing the specifications, claims, or abstract. Views must not be connected by projection lines and must not contain center lines. Waveforms of electrical signals may be connected by dashed lines to show the relative timing of the waveforms.

(1) Exploded views. Exploded views, with the separated parts embraced by a bracket, to show the relationship or order of assembly of various parts are permissible. When an exploded view is shown in a figure which is on the same sheet as another figure, the exploded view should be placed in brackets.

(2) Partial views. When necessary, a view of a large machine or device in its entirety may be broken into partial views on a single sheet, or extended over several sheets if there is no loss in facility of understanding the view. Partial views drawn on separate sheets must always be capable of being linked edge to edge so that no partial view contains parts of another partial view. A smaller scale view should be included showing the whole formed by the partial views and indicating the positions of the parts shown. When a portion of a view is enlarged for magnification purposes, the view and the enlarged view must each be labeled as separate views.

(i) Where views on two or more sheets form, in effect, a single complete view, the views on the several sheets must be so arranged that the complete figure can be assembled without concealing any

and conical elements of an object. Flat parts may also be lightly shaded. Such shading is preferred in the case of parts shown in perspective, but not for cross sections. See paragraph (h)(3) of this section. Spaced lines for shading are preferred. These lines must be thin, as few in number as practicable, and they must contrast with the rest of the drawings. As a substitute for shading, heavy lines on the shade side of objects can be used except where they superimpose on each other or obscure reference characters. Light should come from the upper left corner at an angle of 45°. Surface delineations should preferably be shown by proper shading. Solid black shading areas are not permitted, except when used to represent bar graphs or color.

(n) Symbols. Graphical drawing symbols may be used for conventional elements when appropriate. The elements for which such symbols and labeled representations are used must be adequately identified in the specification. Known devices should be illustrated by symbols which have a universally recognized (conventional) meaning and are generally accepted in the art. Other symbols which are not universally recognized may be used, subject to approval by the Office, if they are not likely to be confused with existing conventional symbols, and if they are readily identifiable.

(o) Legends. Suitable descriptive legends may be used subject to approval by the Office, or may be required by the examiner where necessary for understanding of the drawing. They should contain as few words as possible.

(p) Numbers, letters, and reference characters.

(1) Reference characters (numerals are preferred), sheet numbers, and view numbers must be plain and legible, and must not be used in association with brackets or inverted commas, or enclosed within outlines, e.g., encircled. They must be oriented in the same direction as the view so as to avoid having to rotate the sheet. Reference characters should be arranged to follow the profile of the object depicted.

(2) The English alphabet must be used for letters, except where another alphabet is customarily used, such as the Greek alphabet to indicate angles, wavelengths, and mathematical formulas.

(3) Numbers, letters, and reference characters must measure at least 32 cm. (1/8 inch) in height. They should not be placed in the drawing so as to

interfere with its comprehension. Therefore, they should not cross or mingle with the lines. They should not be placed upon hatched or shaded surfaces. When necessary, such as indicating a surface or cross section, a reference character may be underlined and a blank space may be left in the hatching or shading where the character occurs so that it appears distinct.

(4) The same part of an invention appearing in more than one view of the drawing must always be designated by the same reference character, and the same reference character must never be used to designate different parts.

(5) Reference characters not mentioned in the description shall not appear in the drawings. Reference characters mentioned in the description must appear in the drawings.

(q) Lead lines. Lead lines are those lines between the reference characters and the details referred to. Such lines may be straight or curved and should be as short as possible. They must originate in the immediate proximity of the reference character and extend to the feature indicated. Lead lines must not cross each other. Lead lines are required for each reference character except for those which indicate the surface or cross section on which they are placed. Such a reference character must be underlined to make it clear that a lead line has not been left out by mistake. Lead lines must be executed in the same way as lines in the drawing. See paragraph (l) of this section.

(r) Arrows. Arrows may be used at the ends of lines, provided that their meaning is clear, as follows:

(1) On a lead line, a freestanding arrow to indicate the entire section towards which it points;

(2) On a lead line, an arrow touching a line to indicate the surface shown by the line looking along the direction of the arrow; or

(3) To show the direction of movement.

(s) Copyright or Mask Work Notice. A copyright or mask work notice may appear in the drawing, but must be placed within the sight of the drawing immediately below the figure representing the copyright or mask work material and be limited to letters having a print size of 32 cm. to 64 cm. (1/8 to 1/4 inches) high. The content of the notice must be limited to only those elements provided for by law. For example, "©1983 John Doe" (17 U.S.C. 401) and "M* John Doe" (17 U.S.C. 909) would be properly

limited and, under current statutes, legally sufficient notices of copyright and mask work, respectively. Inclusion of a copyright or mask work notice will be permitted only if the authorization language set forth in § 1.71(e) is included at the beginning (preferably as the first paragraph) of the specification.

(t) *Numbering of sheets of drawings.* The sheets of drawings should be numbered in consecutive Arabic numerals, starting with 1, within the sight as defined in paragraph (g) of this section. These numbers, if present, must be placed in the middle of the top of the sheet, but not in the margin. The numbers can be placed on the right-hand side if the drawing extends too close to the middle of the top edge of the usable surface. The drawing sheet numbering must be clear and larger than the numbers used as reference characters to avoid confusion. The number of each sheet should be shown by two Arabic numerals placed on either side of an oblique line, with the first being the sheet number and the second being the total number of sheets of drawings, with no other marking.

(u) *Numbering of views.*

(1) The different views must be numbered in consecutive Arabic numerals, starting with 1, independent of the numbering of the sheets and, if possible, in the order in which they appear on the drawing sheet(s). Partial views intended to form one complete view, on one or several sheets, must be identified by the same number followed by a capital letter. View numbers must be preceded by the abbreviation "FIG." Where only a single view is used in an application to illustrate the claimed invention, it must not be numbered and the abbreviation "FIG." must not appear.

(2) Numbers and letters identifying the views must be simple and clear and must not be used in association with brackets, circles, or inverted commas. The view numbers must be larger than the numbers used for reference characters.

(v) *Security markings.* Authorized security markings may be placed on the drawings provided they are outside the sight preferably centered in the top margin.

(w) *Corrections.* Any corrections on drawings submitted to the Office must be durable and permanent.

(x) *Holes.* No holes should be made by applicant in the drawing sheets.

(y) *Types of drawings.* See § 1.152 for design drawings, § 1.165 for plant drawings, and § 1.174 for reissue drawings.

[24 FR 10332, Dec. 22, 1959; 31 FR 12923, Oct. 4, 1966; 36 FR 9775, May 28, 1971; 43 FR 20464, May 11, 1978; 45 FR 73657, Nov. 6, 1980; paras. (a), (b), (i), (j), and (l) amended, paras. (n), (o), and (p) added, 53 FR 47809, Nov. 28, 1988, effective Jan. 1, 1989; revised, 58 FR 38719, July 20, 1993, effective Oct. 1, 1993; paras. (c), (f), (g), and (x) revised, 61 FR 42790, Aug. 19, 1996, effective Sept. 23, 1996; paras. (a)(2)(i), (b), (c) & (g) revised, 62 FR 53131, Oct. 10, 1997, effective Dec. 1, 1997; paras. (a), (b), (c), (j), (k), (o), and (x) revised, and para. (y) added, 65 FR 54604, Sept. 8, 2000, effective Nov. 7, 2000; paras. (a)(2), (c), and (j) revised, 65 FR 57024, Sept. 20, 2000, effective Nov. 29, 2000]

§ 1.85 Corrections to drawings.

(a) A utility or plant application will not be placed on the files for examination until objections to the drawings have been corrected. Except as provided in § 1.215(c), any patent application publication will not include drawings filed after the application has been placed on the files for examination. Unless applicant is otherwise notified in an Office action, objections to the drawings in a utility or plant application will not be held in abeyance, and a request to hold objections to the drawings in abeyance will not be considered a bona fide attempt to advance the application to final action (§ 1.135(c)). If a drawing in a design application meets the requirements of § 1.84(c), (f), and (g) and is suitable for reproduction, but is not otherwise in compliance with § 1.84, the drawing may be admitted for examination.

(b) The Office will not release drawings for purposes of correction. If corrections are necessary, new corrected drawings must be submitted within the time set by the Office.

(c) If a corrected drawing is required or if a drawing does not comply with § 1.84 at the time an application is allowed, the Office may notify the applicant and set a three month period of time from the mail date of the notice of allowability within which the applicant must file a corrected or formal drawing in compliance with § 1.84 to avoid abandonment. This time period is not extendable under § 1.136(a) or § 1.136(b).

* Upon receipt of the returned postcard, the addressee should promptly review the postcard to ensure that all documents and all pages were received by the USPTO.

Pursuant to 35 USC 21 and 37 CFR § 1.10, any correspondence received by the USPTO (including an application filing) that was delivered by the "Express Mail Post Office to Addressee" service of the United States Postal Service (USPS) will be considered filed in the Office on the date of deposit with the USPS. The date of deposit with the USPS is shown by the "date-in" on the "Express Mail" mailing label or other official USPS notation. If the USPS deposit date cannot be determined, however, the correspondence will be accorded the Office receipt date as the filing date. Before depositing an application with the USPS in accordance with the Express Mail procedure set forth at 37 CFR § 1.10, it is important to place the number of the "Express Mail" mailing label on the application papers. Further, only one application should be mailed in a single "Express Mail" package.

Back to the Top

Drawing Requirements

Information on drawing requirements is based substantially on 37 CFR § 1.84. There are two acceptable categories for presenting drawings in utility patent applications: black ink (black and white) and color.

Black and white drawings are normally required. India ink, or its equivalent that secures black solid lines, must be used for drawings. Drawings made by computer printer should be originals, not photocopies.

On rare occasions, color drawings may be necessary as the only practical medium by which the subject matter sought to be patented in a utility patent application is disclosed. The USPTO will accept color drawings in utility patent applications and statutory invention registrations only after granting a petition explaining why the color drawings are necessary. Any such petition must include the following:

- the appropriate fee set forth in 37 CFR § 1.17(h)
- three sets of color drawings; and
- the following language as the first paragraph in that portion of the specification relating to the BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING: If the language is not in the specification, an amendment to insert the language must accompany the petition.

"The patent or application file contains at least one drawing executed in color. Copies of this patent or patent application publication with color drawing(s) will be provided by the Office upon request and payment of the necessary fee."

Photographs are not ordinarily permitted in utility patent applications. The USPTO will accept black and white photographs in utility patent applications only in applications in which the invention is not capable of being illustrated in an ink drawing or where the invention is shown more clearly in a photograph. For example, photographs or photomicrographs of electrophoresis gels, blots (e.g., immunological, western, southern, and northern), autoradiographs, cell cultures (stained and unstained), histological tissue cross sections (stained and unstained), animals, plants, in vivo imaging, thin layer chromatography plates, crystalline structures, and ornamental effects continue to be acceptable. Only one set of black and white photographs is required. Furthermore, no additional processing fee is required.

Photographs have the same sheet size requirements as other drawings. The photographs must be of sufficient quality so that all details in the drawing are reproducible in the printed patent or any patent application publication.

Color photographs will be accepted in utility patent applications if the conditions for accepting color drawings have been satisfied.

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[Back to the Top](#)

Identification of Drawings

Identifying indicia, if provided, should include the title of the invention, the inventor's name, the application number (if known), the confirmation number (if known), and docket number (if any). This information should be placed on the top margin of each sheet of drawings, centered on the page. The name and telephone number of a person to call if the USPTO is unable to match the drawings to the proper application may also be provided.

[Back to the Top](#)

Graphic Forms in Drawings

Chemical or mathematical formulas, tables, computer program listings, and waveforms may be submitted as drawings and are subject to the same requirements as drawings. Each chemical or mathematical formula must be labeled as a separate figure, using brackets when necessary, to show that information is properly integrated. Each group of waveforms must be presented as a single figure, using a common vertical axis with time extending along the horizontal axis. Each individual waveform discussed in the specification must be identified with a separate letter designation adjacent to the vertical axis. These may be placed in a landscape orientation if they cannot be presented satisfactorily in a portrait orientation. Typewritten characters used in such formulas and tables must be chosen from a block (nonscript) type font or lettering style having capital letters which are at least 0.21 cm. (0.08 inch) high (elite type). A space at least 0.64 cm. (1/4 inch) high should be provided between complex formulas or tables and the text.

[Back to the Top](#)

Paper

Drawings submitted to the USPTO must be made on paper which is flexible, strong, white, smooth, nonshiny, and durable. All sheets must be free from cracks, creases, and folds. Only one side of the sheet shall be used for the drawing. Each sheet must be reasonably free from erasures and must be free from alterations, overwritings, and interlineations.

All drawings sheets, including sheets containing photographs, in an application must be the same size. One of the shorter sides of the sheet is regarded as its top. The size of the sheets on which drawings are made must be:

- 21.6 cm. by 27.9 cm. (8 1/2 by 11 inches), or
- 21.0 cm. by 29.7 cm. (DIN size A4).

The sheets must not contain frames around the sight (the usable surface), but should have scan target points (cross hairs) printed on two outer corner margin corners. The following margins are required:

- On 21.6 cm. by 27.9 cm. (8 1/2 by 11 inch) drawing sheets, each sheet must include a top margin of at least 2.5 cm. (1 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 1.5 cm. (5/8 inch), and a bottom margin of at least 1.0 cm. (3/8 inch) from the edges, thereby leaving a sight no greater than 17.6 cm. by 24.4 cm. (6 15/16 by 9 5/8 inches).
- On 21.0 cm. by 29.7 cm. (DIN size A4) drawing sheets, each sheet must include a top margin of at least 2.5 cm. (1 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 1.5 cm (5/8 inch), and a bottom margin of at least 1.0 cm. (3/8 inch) from the edges, thereby leaving a sight no greater than 17.0 cm. by 26.2 cm.

[Back to the Top](#)

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not cross or mingle with the lines. They should not be placed upon hatched or shaded surfaces. When necessary, such as indicating a surface or cross section, a reference character may be underlined and a blank space may be left in the hatching or shading where the character occurs so that it appears distinct.

The same part of an invention appearing in more than one view of the drawing must always be designated by the same reference character, and the same reference character must never be used to designate different parts.

Reference characters not mentioned in the description shall not appear in the drawings. Reference characters mentioned in the description must appear in the drawings.

Back to the Top

Lead Lines and Arrows

Lead lines are those lines between the reference characters and the details to which they refer. Such lines may be straight or curved and should be as short as possible. They must originate in the immediate proximity of the reference character and extend to the feature indicated. Lead lines must not cross each other. Lead lines are required for each reference character except for those which indicate the surface or cross section on which they are placed. Such a reference character must be underlined to make it clear that a lead line has not been left out by mistake. Lead lines must be executed in the same way as lines in the drawing.

Arrows may be used at the ends of lines, provided that their meaning is clear, as follows:

- on a lead line, a freestanding arrow to indicate the entire section toward which it points;
- on a lead line, an arrow touching a line to indicate the surface shown by the line looking along the direction of the arrow, or
- to show the direction of movement.

Back to the Top

Copyright or Mask Work Notice

A copyright or mask work notice may appear in the drawing, but must be placed within the sight of the drawing immediately below the figure representing the copyright or mask work material and be limited to letters having a print size of 0.32 cm. to 0.64 cm. (1/8 to 1/4 inches) high. The content of the notice must be limited to only those elements provided for by law. For example, "©1983 John Doe" (17 U.S.C. 401) and "M John Doe" (17 U.S.C. 909) would be properly limited and, under current statutes, legally sufficient notices of copyright and mask work, respectively. Inclusion of a copyright or mask work notice will be permitted only if the authorization language set forth in 37 CFR §1.71(e) is included at the beginning (preferably as the first paragraph) of the specification.

Back to the Top

Numbering of Sheets of Drawings and Views

The sheets of drawings should be numbered in consecutive Arabic numerals, starting with 1, within the sight (the usable surface). These numbers, if present, must be placed in the middle of the top of the sheet, but not in the margin. The numbers can be placed on the right-hand side if the drawing extends too close to the middle of the top edge of the usable surface. The drawing sheet numbering must be clear and larger than the numbers used as reference characters to avoid confusion. The number of each sheet should be shown by two Arabic numerals placed on either side of an oblique line, with the first being the sheet number and the second being the total number of sheets of drawings, with no other marking.

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